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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,495	03/31/2004	Yang Cao	42390.P19024	8614

8791 7590 08/16/2007
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EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1753

MAIL DATE	DELIVERY MODE
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08/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/816,495

Applicant(s)

CAO ET AL.

Examiner

William T. Leader

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 12-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/31/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election of Group I, claims 1-11 in the reply filed on April 2, 2007, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 12-21 are withdrawn from consideration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 1 recites the step of "determining a reference resistance of a reference wafer" and the step of "determining a calibration resistance of a calibration wafer". From the wording of the claims it appears that these steps call for determining the electrical resistance of a wafer itself.

5. Wording similar to that recited in claim 1 appears at page 6, lines 20-22 (paragraph [0018]) which state "In on [sic, one] embodiment, calibration may include determining a reference resistance of a reference wafer, determining a calibration resistance of a calibration wafer . . .". However, later in the same paragraph, it is stated "It should be noted that the reference and calibration resistance are *not* the resistance of the thin copper seed layer of the reference wafer and calibration wafer, respectively. Rather, the reference resistance and the

calibration resistance are the resistances of the electrochemical deposition (e.g., electroplating) cell with the reference wafer and the calibration wafer, respectively, which is equal to the cell voltage divided by the total current" (emphasis added). If the claim is read in light of the specification, then the resistance being measured is *not* that of the wafer alone, but the resistance of the electrochemical deposition cell including the wafer. Thus, the scope of the steps of determining the reference resistance and the calibration resistance recited in claim 1 is not clear. What is being determined?

6. Claim 2 recites the step of measuring electrochemical deposition cell voltage of the reference wafer. The expression "cell voltage of the reference wafer" is not clear. Is it the voltage across the cell or the voltage across of the wafer that is being measured? Or should the expression read --cell voltage with the reference wafer-- so that the step actually measures the voltage across the cell with the reference wafer connected to the cell and serving as the cathode of the cell? (Note, page 1, lines 10-12, paragraph [0002] of the specification which states that whole surface of the wafer is covered with a seed layer that serves as a cathode electrode in the electroplating cell.)

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-11 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the

specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

9. Claims 1 and 6-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for selecting an error trigger based on a comparison of resistances where the determination of resistances is based on determining the resistance of an electrochemical deposition cell including a wafer (as described in paragraph [0018]), does not reasonably provide enablement for selecting an error trigger based on a comparison of resistances measured directly on a wafer surface. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims, if the claim 1 is interpreted to recite direct measurement of the resistance only the wafer. In the specification, all of the description of the manner in which the invention is practiced is based on an electrochemical deposition cell.

10. Due to the uncertainty in the interpretation of the scope of the claims, no rejection based on prior art has been made.

11. Paragraph [0007] states that figure 1A illustrates a prior plating system, while paragraph [0008] states that figure 1B illustrate (sic, illustrates) a prior laser edge detecting system. Based on this description of the drawings, figures 1A and 1B should be labeled "Prior Art".

Art Unit: 1742


Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William Leader
June 20, 2007

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700